



## WISECOM: GSM and Wi-Fi Rapidly Deployed

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# Presentation Outline



- Communications sufferings after a disaster
- Where can satellites help?
  - Current solutions: narrow and broadband
  - WISECOM: Functional Architecture
- Conclusions



# Communications sufferings after a disaster



## Damages to terrestrial infrastructure:

- Telephone lines, wire line, switching centers that route calls
- Local wireless networks: base stations and switching centers.
- Broadcast stations

## Consequences:

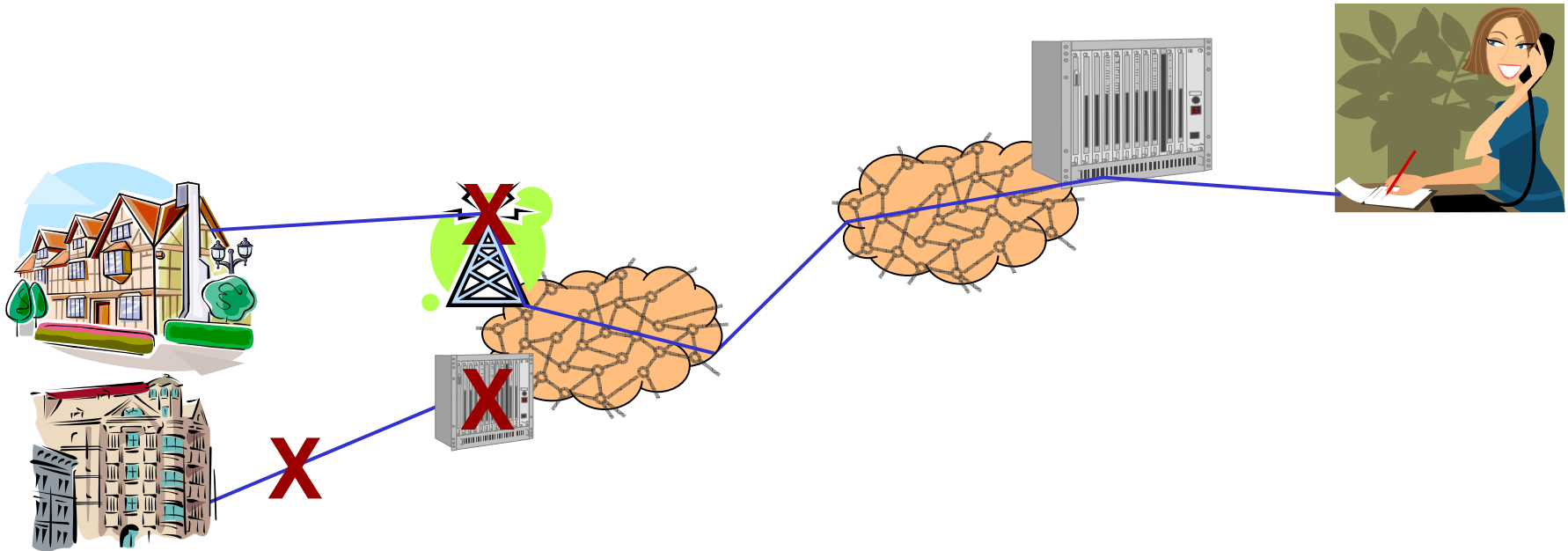
- no news and emergency information
- contact emergency responders impossible
- communicate with the loved ones
- Emergency workers and public safety officials have difficulty with communicating and coordinating with one another

# Communications sufferings after a disaster



## Damages to terrestrial infrastructure:

- Telephone lines, wire line, switching centers that route calls
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# Narrowband: satellite phones



Narrowband: a few Kbit/s information rate

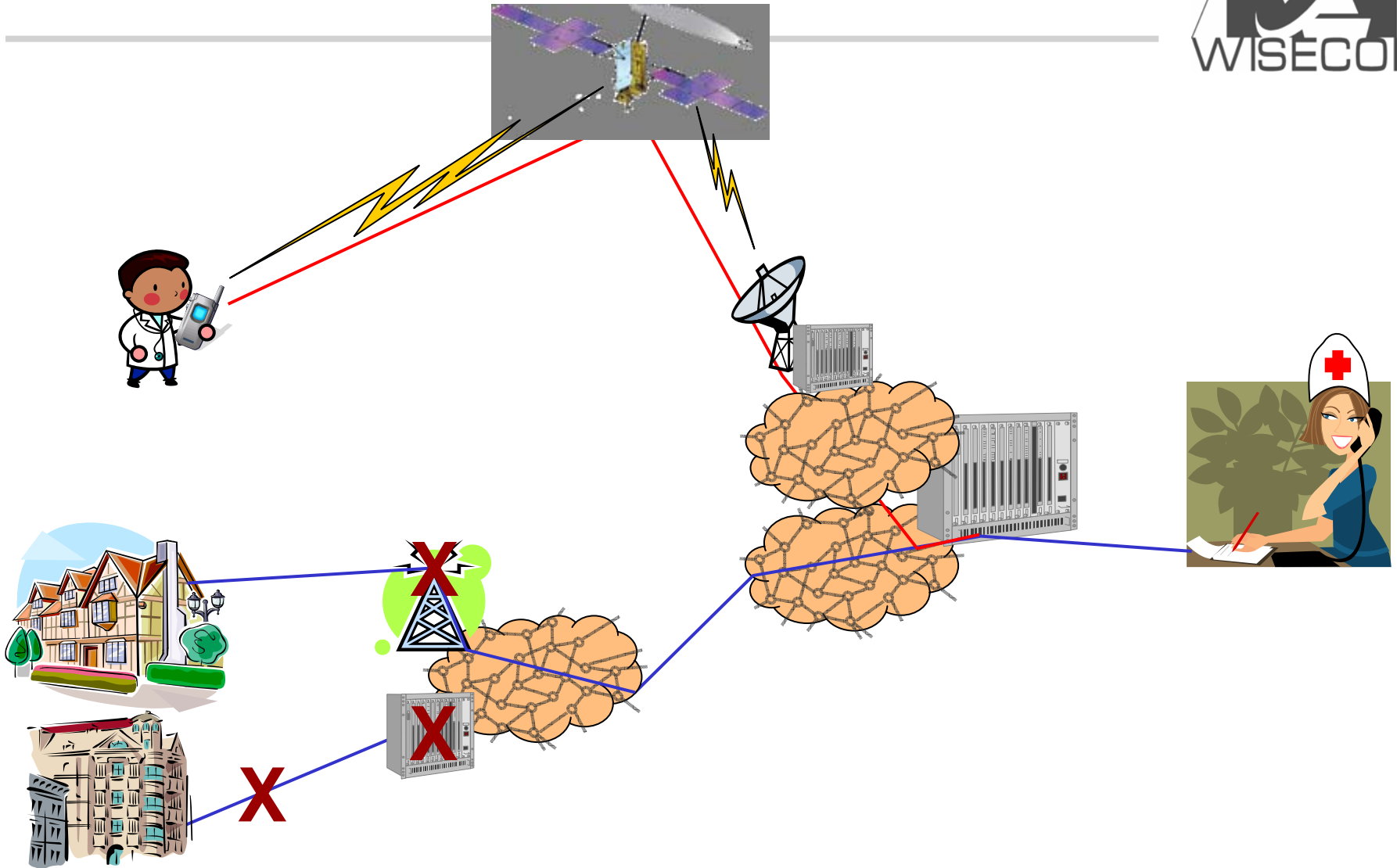
- Can be handheld
- Omni-directional antennas (do NOT need to be pointed)

➤ Examples:

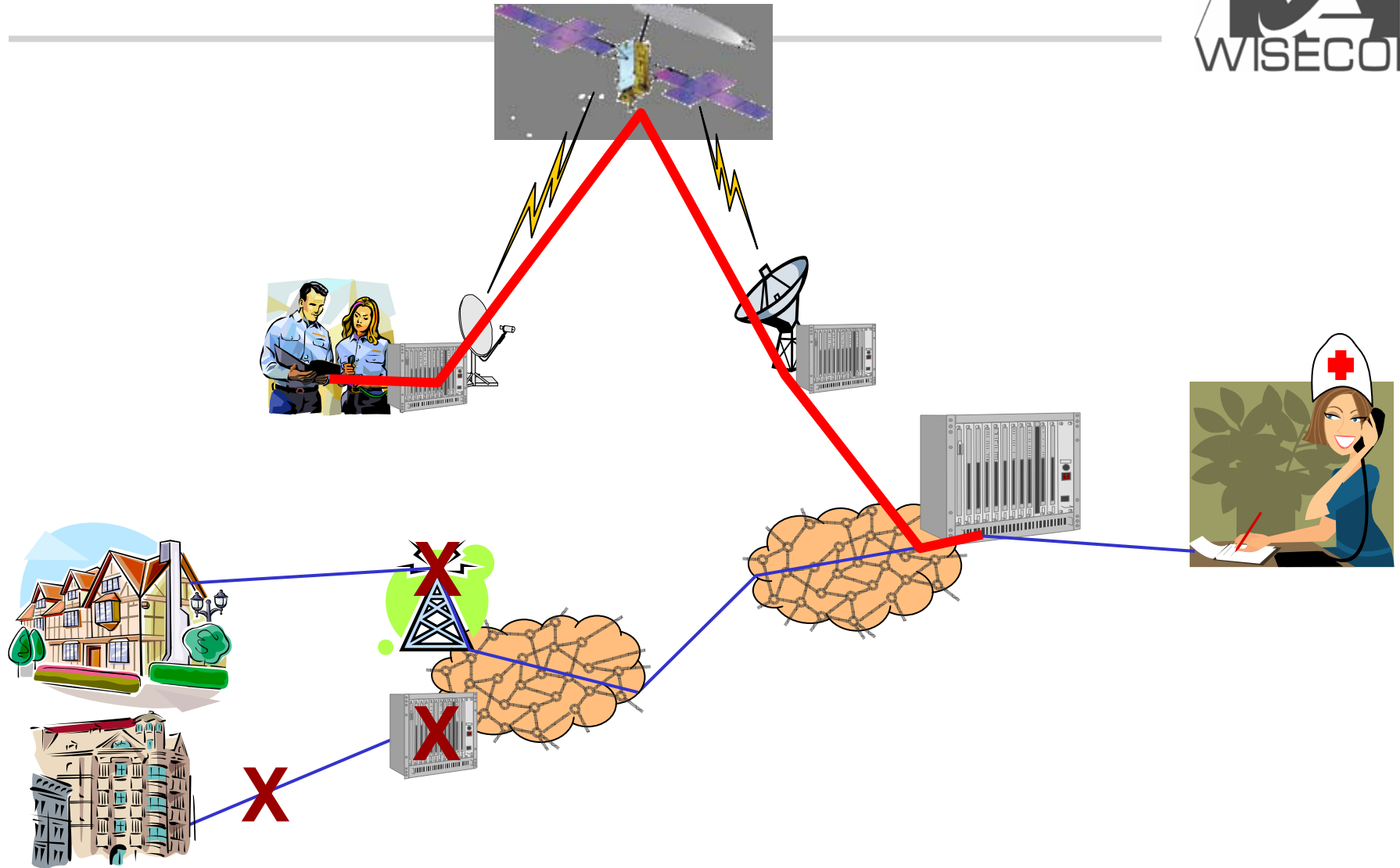
- Thuraya
- Globalstar
- Iridium
- Inmarsat GAN
- ...

➤ Inmarsat BGAN: mid way between Narrow and Broadband

# Narrowband: satellite phones



# Inmarsat BGAN: between Narrow and Broadband

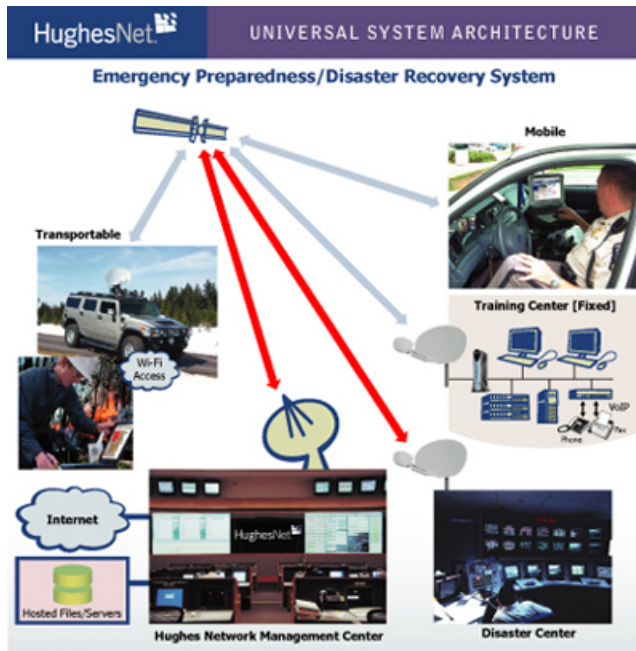


# Broadband: Ku-band

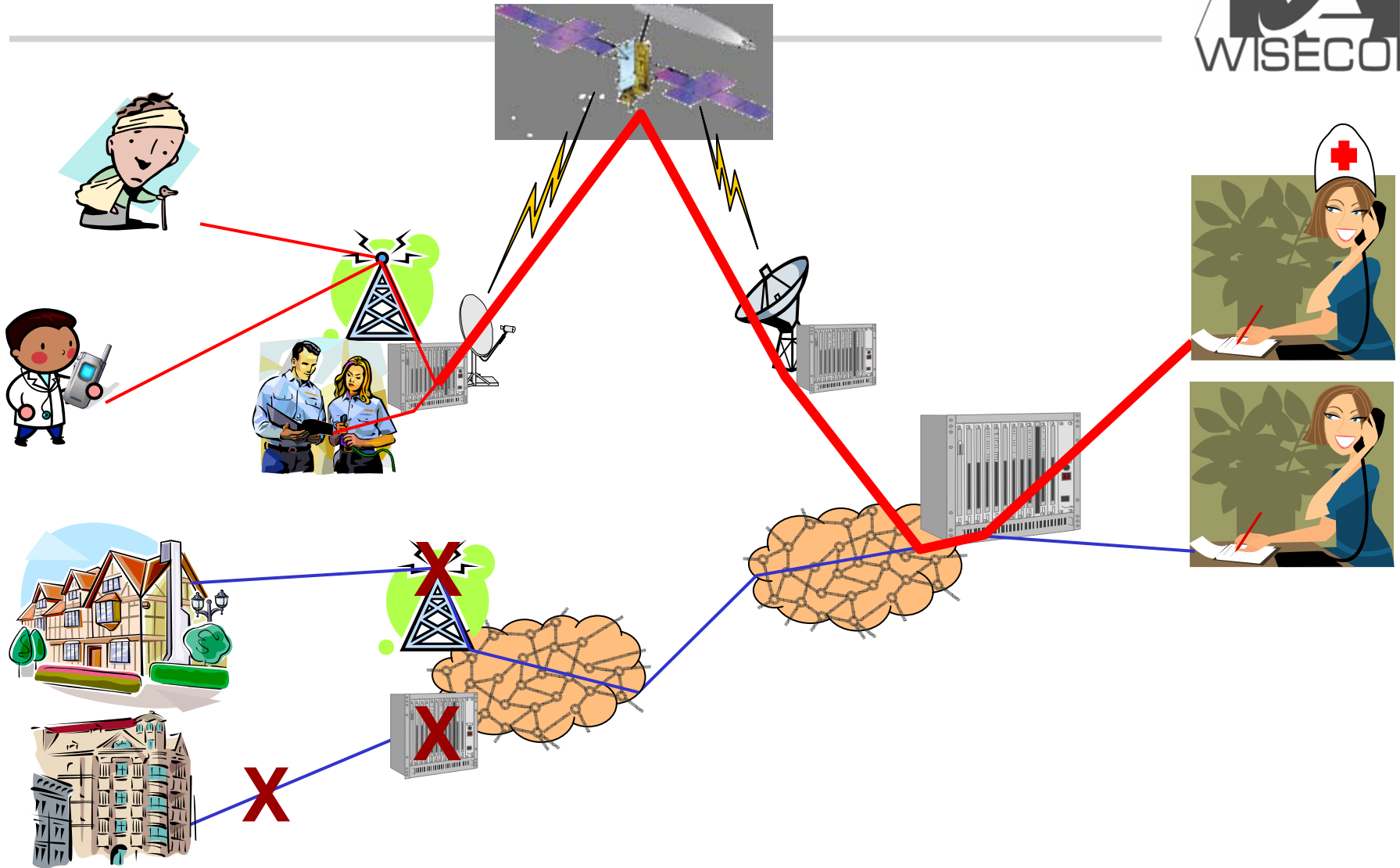


Broadband: up to several Mbit/s information rate

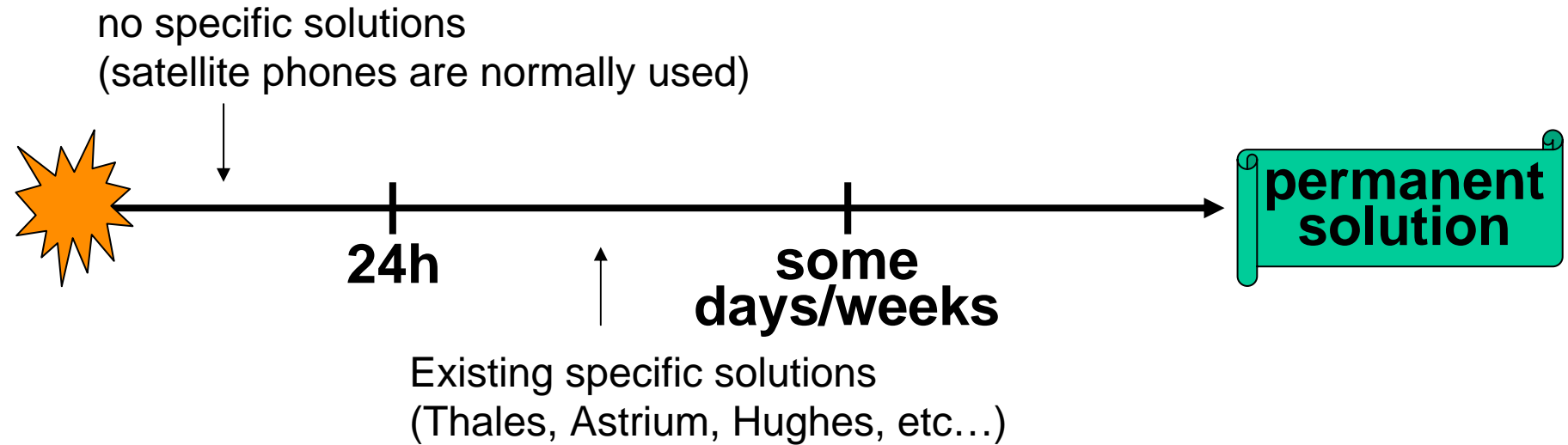
- Bigger antennas
- Highly directive antennas (need to be pointed)



# Broadband: Ku-band



# Emergency Timeline



WISECOM

- Need for Quickly Deployable (< 24 h) Broadband Solutions
- Interoperability with Permanent Solutions highly desirable

# Classification of disaster scenarios



- RED: more critical
- YELLOW: medium
- GREEN: not very critical

Disaster Phase \ Disaster Size	Small Disaster	Medium Disaster	Large Disaster
Early Disaster Phase	SD1	MD1	LD1
Response Phase	SD2	MD2	LD2
Recovery Phase	SD3	MD3	LD3

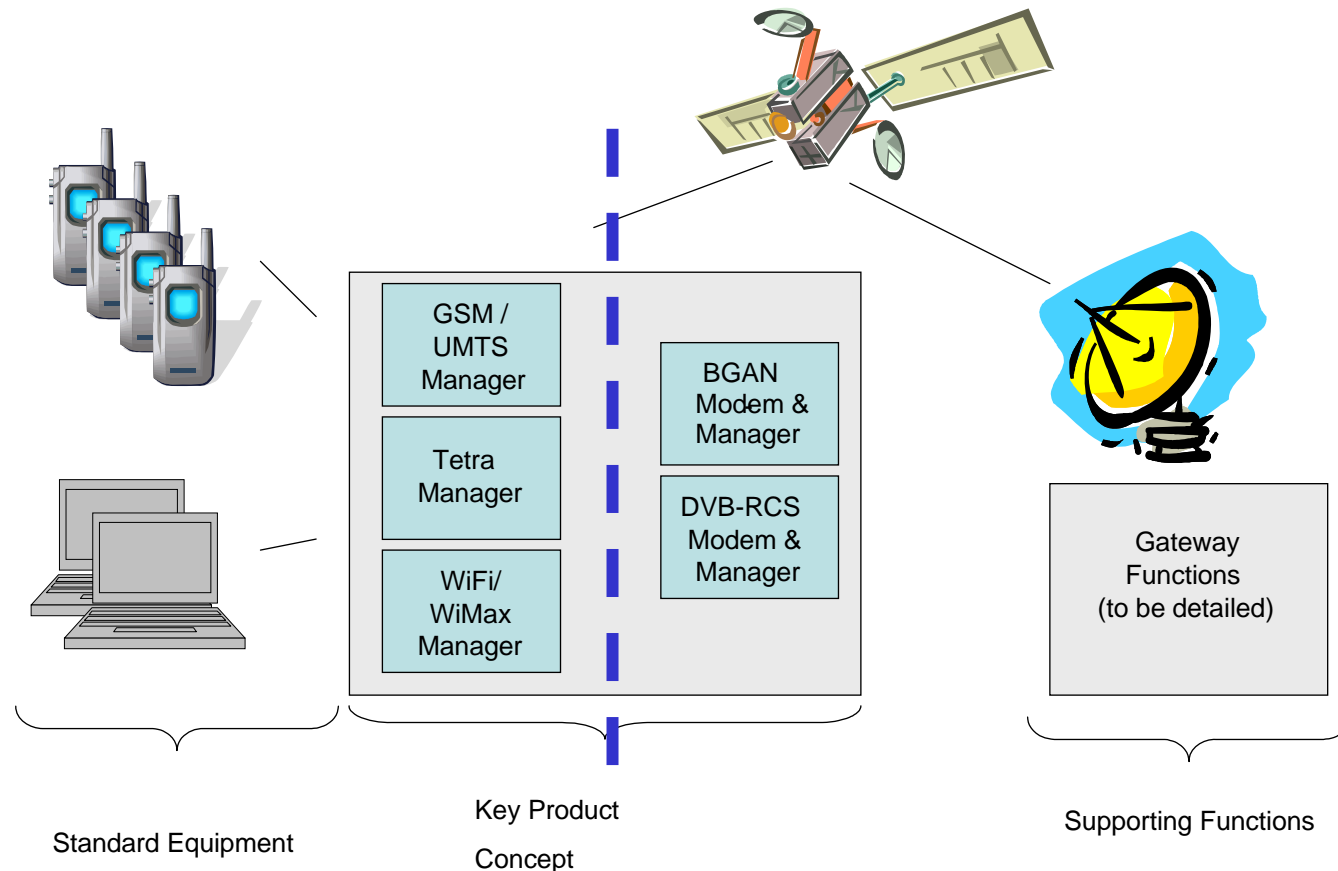


# Disasters: Where can satellites help?



## The WISECOM approach:

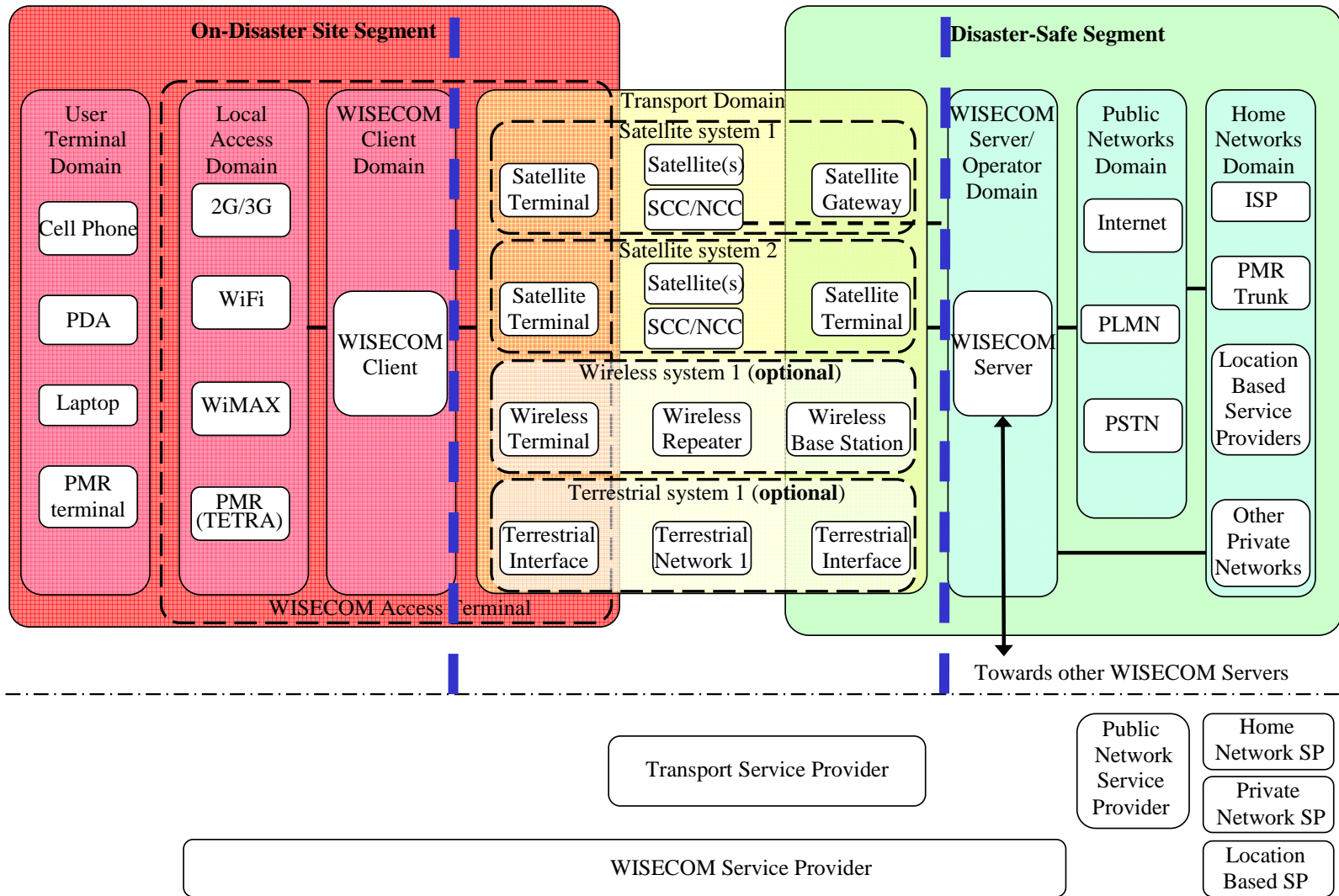
Study, develop, and validate by live trials candidate rapidly deployable lightweight communication infrastructures for emergency conditions



## ➤ GSM, UMTS, TETRA base stations: examples



# WISECOM Functional Architecture



# Conclusions



- **satellites are a fundamental element in emergency communications**
  - **but their integration with terrestrial technologies is needed**
- **Looking at the current reality, it seems that there is no widely accepted way of organizing the re-establishment of a telecommunication infrastructure in a post-disaster situation**
  - **satellite phones, broadband systems, proprietary VSAT solutions, etc...**
- **the WISECOM project proposes a model which:**
  - **includes the existing state of the art,**
  - **is easily to be upgraded with new upcoming technologies,**
  - **is general enough to accommodate future evolutions towards standard interface(s) which could enable interactions between rescue teams and different service providers**
- **This should be considered in future standardization activities.**



## Thank you

for more information: [www.wisecom-fp6.eu](http://www.wisecom-fp6.eu)

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